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ABSTRACT

An instructor's manual and student activity guide on horticulture are provided in this set of prevocational education materials which focus on the vocational area of agriculture. (This set of materials is one of ninety-two prevocational education sets arranged around a cluster of seven vocational offerings: agriculture, home economics, distributive education, health occupations, world of work, trade and industry, and office occupations.) The instructor's guide is organized into the following elements: title of activity, duration of activity (eleven to seventeen days), activity goals, five instructional objectives, related vocational clusters, and activity implementation (description, materials needed, safety considerations, teacher preparation prior to class, during the class, follow-up activities, answer key to student check point activities 1 and 2, and masters for duplication [e.g., checksheets]). The student activity guide provides step-by-step instructions (narrative and illustrations) for completing each instructional objective (e.g., identify parts of a plant, prepare soil for germination, plant a flat of seeds). At the end of each set of instructions is a student check point (evaluation activity). Five occupational descriptions (e.g., plant propagator, horticultural worker) conclude the document. (JH)

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AGRICULTURE – HORTICULTURE

Kit No. 36

INSTRUCTOR'S MANUAL

Prepared by

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Office of Vocational Education
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In Cooperation With

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1978

CE 020 510

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TITLE OF ACTIVITY

Kit No. 36, Agriculture – Horticulture

DURATION

Main Activity – 10 to 12 days
(The first four objectives can be done in about five or six days. There will be at least a five-day lag between Instructional Objectives IV and V.)
Follow-up – 1 to 5 days

GOALS

The students will develop an understanding of how plants are reproduced by seeds or cuttings.

The students will develop an understanding of why different methods of propagation are used.

INSTRUCTIONAL OBJECTIVES

Given a plant, the students will be able to identify the basic parts (leaves, stem, nodes, roots, tip, and petiole).

Given a plant, the student will identify the reproductive system.

Given step-by-step instructions, the student will prepare soil for germination.

Given step-by-step instructions, the student will plant a flat of seeds.

Given step-by-step instructions, the student will root stem cuttings in soil or water.

VOCATIONAL CLUSTERS

Agriculture
Office Occupations

ACTIVITY IMPLEMENTATION

A. Activity Description

This is an individualized activity. Each student will become a greenhouse propagator. The student will use two methods to reproduce plants frequently used by nursery people.

B. Safety

Precaution should be taken with the cutting knives. Students should not play with them. Remind the students that knives are tools and not toys.

C. Materials Required

1. Audio Visual Equipment
   None
2. Technical Equipment
   4 trays to mix soil — 3 rulers, 6"
   12 cutting knives — 3 controls
   3 sprinkler tops — 3 pads
3. Expendable Materials
   Large plants such as coleus, impatiens, wandering Jew, etc. (6 to 10 plants) They should have many branches.
   Seed such as coleus or impatiens (½ package per student).
   Potting soil such as Redi-Earth. (50-pound bag should be enough for a class of 20 to 25) (50 lbs. – 22.7 kg)
   Perlite – one bag should be enough. This could be replaced by sand.
   Small peat pots or paper cups
   Plastic – Handi-Wrap etc. will serve the purpose or use plastic bags to put over seed flats to hold water in (one roll of plastic should be enough).
   Several gallon food cans (empty) or buckets the same size. (3.79 l)
   Water buckets or water hose with mist nozzle
   Seed flats (If these are not provided, egg cartons or paper cups with holes in the bottom work well.)
   Masking tape or labels
   3 soda bottles

D. Preparation Prior To Class

Prepare masters for this activity (plants to be labeled, etc.)

Have soil, perlite, measuring cans, empty container to mix in, seed flats, and water buckets situated for easy access. If soil is mixed inside the classroom, you may want to put paper on the floor. This activity should be done outside to reduce the mess.

Have several small rulers available. Seeds and plastic for germinator should be on tables. You may also wish to put some pencils or small sticks on the tables to make rows in soil.

Have a well-lighted area (near an electrical outlet) ready to set germinator in.

Have masking tape or labels available.

Have water buckets and seed flats out. Knives for cuttings and plants should be in an accessible area. Have area ready to set flats and buckets. Labels or masking tape witn marking pens should be out also.

E. During Class Session

Pass out the Student Activity Guide. Read the introduction to your students found at the beginning of the guide. Remind students that they are to follow directions. Give out check sheets as they are needed.

F. Follow-up Activities

1. Have students fill out VIEW Fact Sheets.
2. Students can transplant seedlings and cuttings to small pots. After plants are larger, students may have a plant sale. This would require them to price the plants, handle money and assist customers.
3. Students should write a paper telling what they like or dislike about the activity and why.
4. Invite a nurseryperson or a county agent to school to speak on other aspects of growing plants.
5. Visit a greenhouse, garden center, or nursery.

ANSWER KEY

Instructional Objective I

1. Tip of plant
2. Leaf
3. Petiole
4. Node
5. Stem
6. Roots

Instructional Objective II

A.

1. stigma
2. style — pistil (female)
3. ovary
4. anther — stamen (male)
5. filament

B. Eggs are produced in the female part of the flower. Pollen is produced in the male part of the flower. When the pollen and egg cells join, they form a seed in the ovary. Seeds germinate when they come in contact with water and heat. A new plant results.

MASTERS FOR DUPLICATION

VIEW Fact Sheet
Check Sheets:
Instructional Objective I
Instructional Objective II
Instructional Objective VI

VIEW FACT SHEET

NAME _____ CLASS _____ OCCUPATION _____

A. List the advantages (good points) of this occupation (job).

B. List the disadvantages (bad points) of this occupation (job).

C. List three things you should know to do this occupation (job).
1.
2.
3.

D. What type of education should you get to be prepared (do) for this occupation (job)?

E. What courses must you take to go into this occupation (job)?

F. What do you think your future in this occupation (job) will be?

G. What wage can you expect in this occupation (job)?

H. What are the working hours of this occupation (job)?

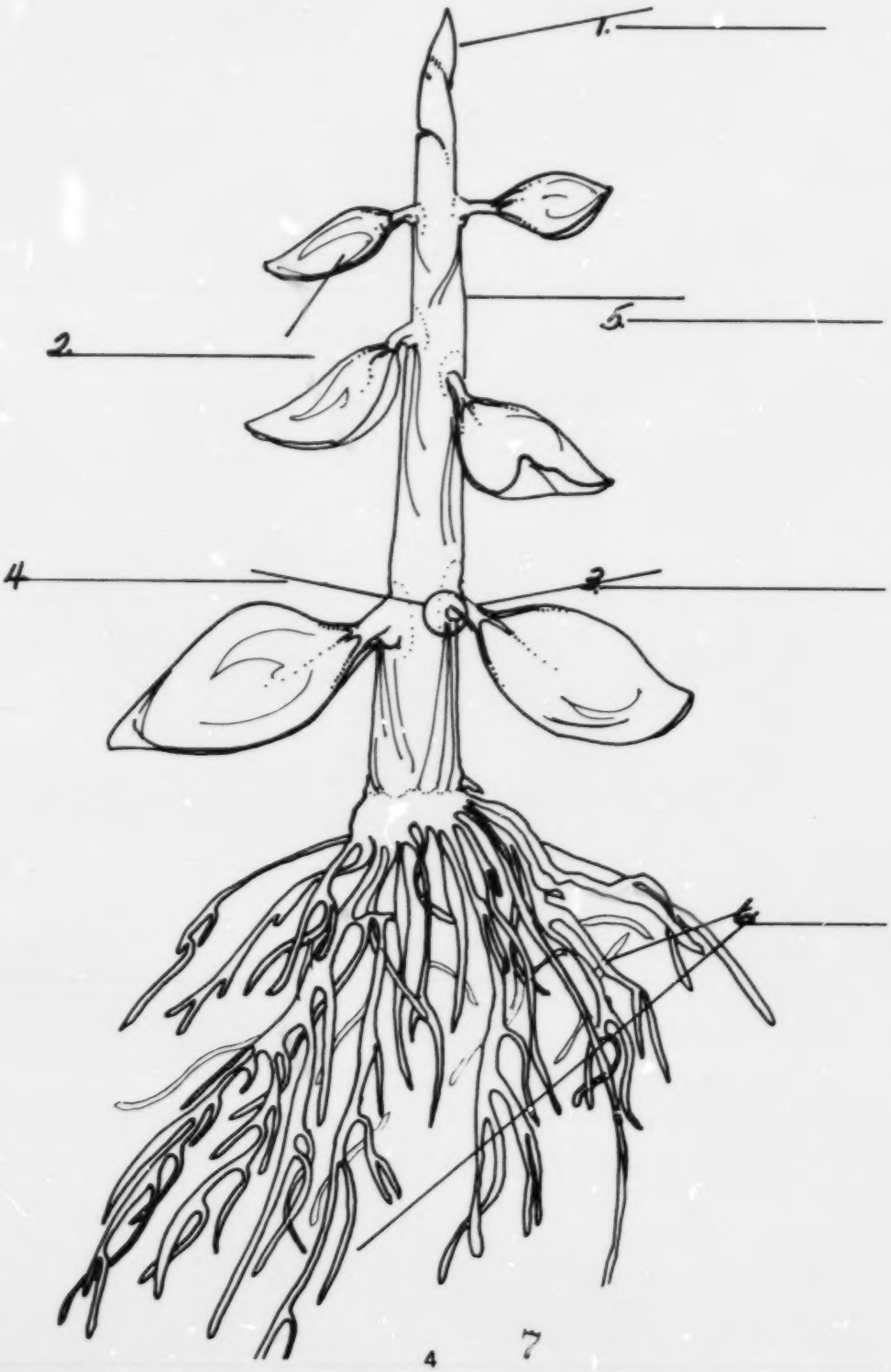
I. To learn more about this occupation (job), write to:

J. Using a scale of 1 to 5, circle the number that measures your interest in this occupation (job) as a possible career.

I don't like it. 1 2 3 4 5 I like it.

CHECK SHEET FOR OBJECTIVE I

LABEL THE SIX PARTS OF THIS PLANT :



CHECK SHEET – OBJECTIVE II

A Label the male and female parts of the flower:

B. List or describe the process of seed germination.

CHECK SHEET FOR INSTRUCTIONAL OBJECTIVE VI

Enter the measurements you make in the proper column.

Plant Number	Length of plants rooted in water	Root length of plants rooted in water	Length of plants rooted in soil	Root length of plants started in soil	Seedling Length	Root length of seedlings
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
TOTAL						
Average						

AGRICULTURE – HORTICULTURE

Kit No. 36

STUDENT
LEARNING ACTIVITY GUIDE

Prepared by

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Agriculture-Horticulture

INTRODUCTION

Have you ever been in a greenhouse or store filled with beautiful green plants? If you have, you may have wondered how these lush plants got started. Through this activity you will have a chance to learn three ways to grow new plants. These three methods are the ones usually used by nurserypersons (people who grow plants).

Plants are reproduced either sexually or asexually. *Sexual* reproduction means that new plants have two parents. The seed which is the beginning of sexually reproduced plants comes from flowers. When plants are grown from seeds they often vary. They are seldom exactly like the parents. When a plant is *asexually* reproduced, it has only one parent. Did you know that a new plant can be produced from a stem with no leaves, the roots, leaves, and other parts of a plant. New plants that are asexually reproduced will be exactly like the parent plant (plant that stem, root, etc., comes from).

There are advantages and disadvantages to both methods of reproduction. During this activity you will have the opportunity to decide for yourself which is the quickest and most economical means of reproducing plants. Can you guess which method commercial growers use most often?

GOALS

Students will develop an understanding of how plants are reproduced by seeds or cuttings.

Students will develop an understanding of why different methods of propagation are used.

DIRECTIONS

Follow each step carefully and in the order they come.

Repeat the steps if you do not answer the Checkpoints correctly.

Do not write in the booklet. Answer Checkpoint questions on a separate sheet.

Answer Checkpoint questions without looking for the answers in the booklet.

SAFETY

Do not leave cutting knives open when not in use.

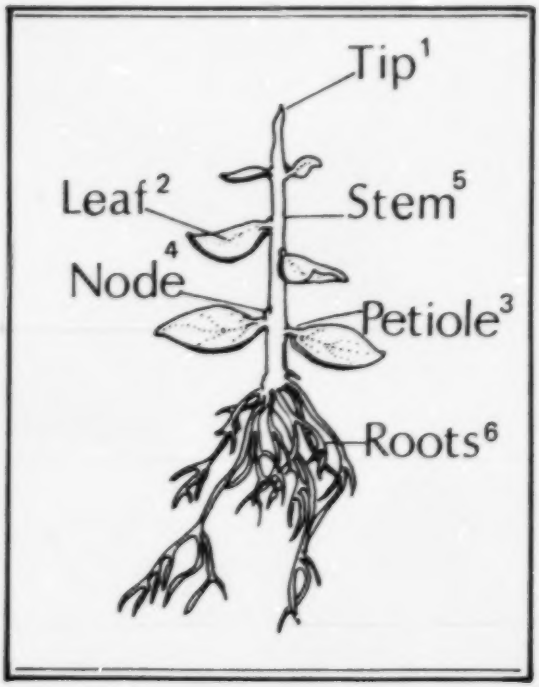
Be careful not to cut your fingers with the knives. You may want to wrap your thumb with some tape.

NEVER play with the knives. Do not point the knives toward other people.

PROGRAMMED TEXT

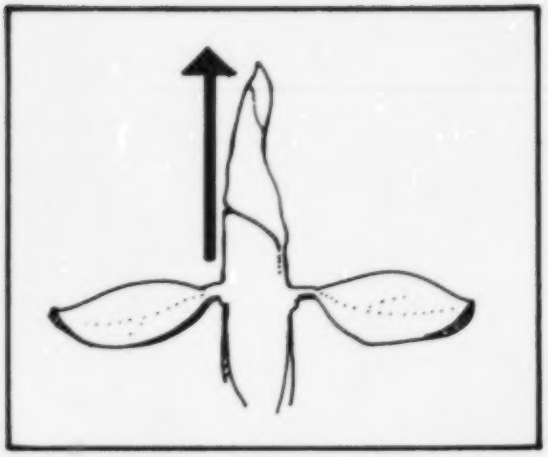
Instructional Objective 1

The student will identify the six parts of the plant.

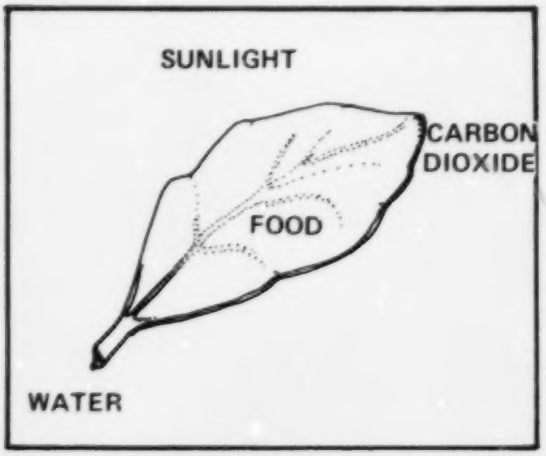


STEP 1 – Study the six main parts of the plant in the picture.

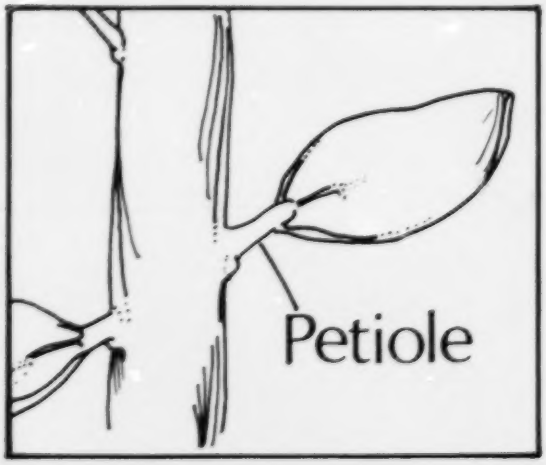
STEP 2 – Study the description of what each part does.



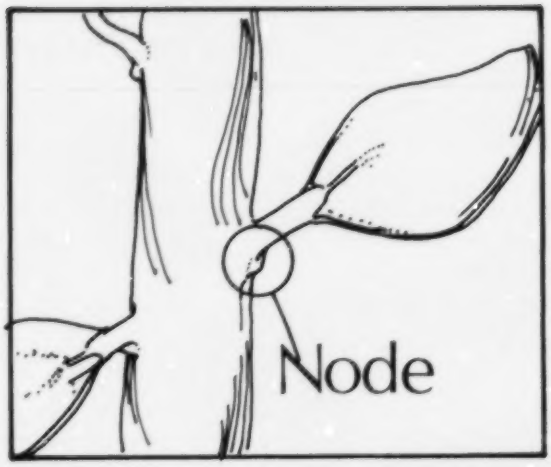
STEP 3 – Tip of plant: The top part which controls the upward growth.



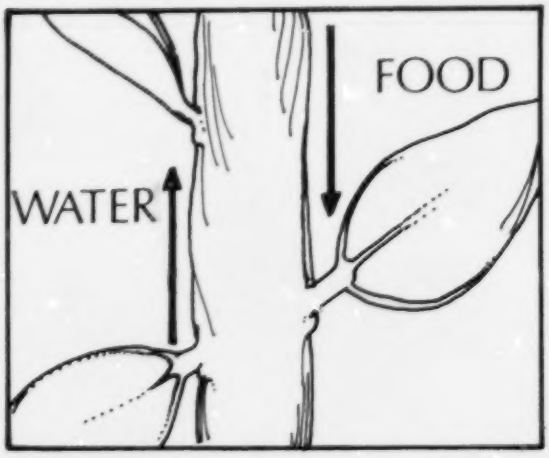
STEP 4 – Leaf: Produces food for the plant from sunlight, water, and carbon dioxide.



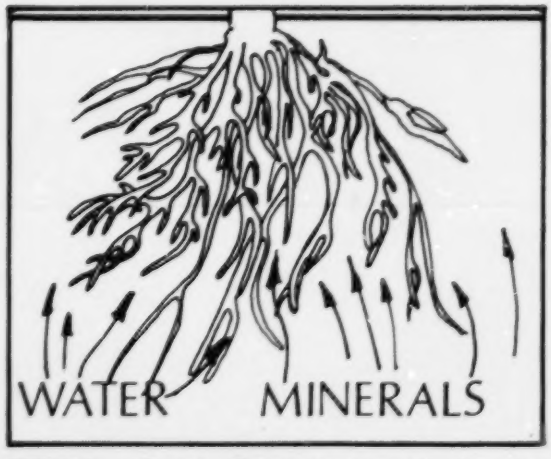
STEP 5 – Petiole: Stem which connects the leaf to the main stem.



STEP 6 – Node: Bumpy area on main stem to which the petiole attaches.



STEP 7 – Stem: Gives support to the plant and leaves. Also moves water and food through the plant.



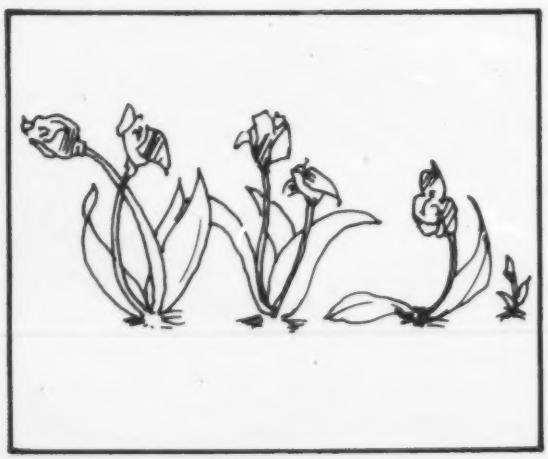
STEP 8 – Roots: Takes water and minerals from the soil for the plant to use. Helps anchor the plant in the soil.

Check Point

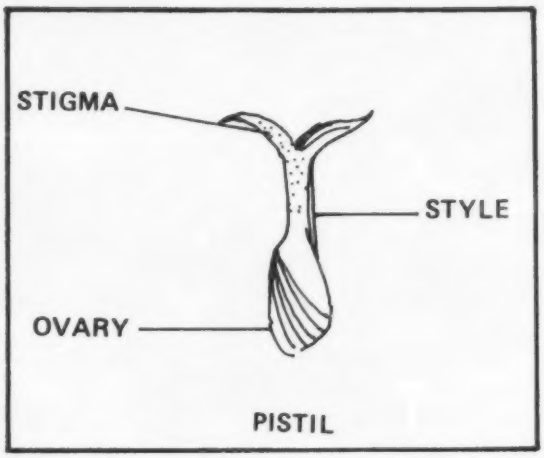
Label the six parts of the plant and explain what each part does.

Instructional Objective II

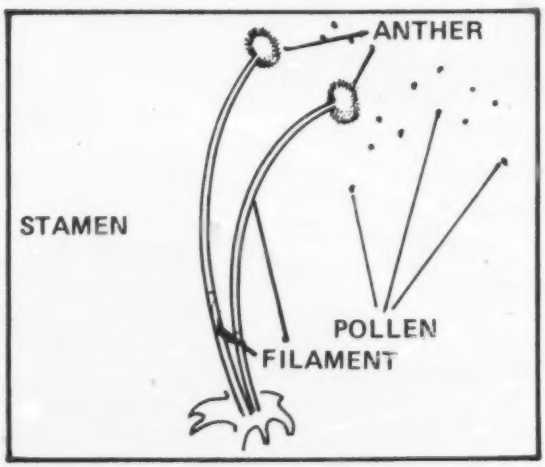
The student will identify the reproductive system of plants.



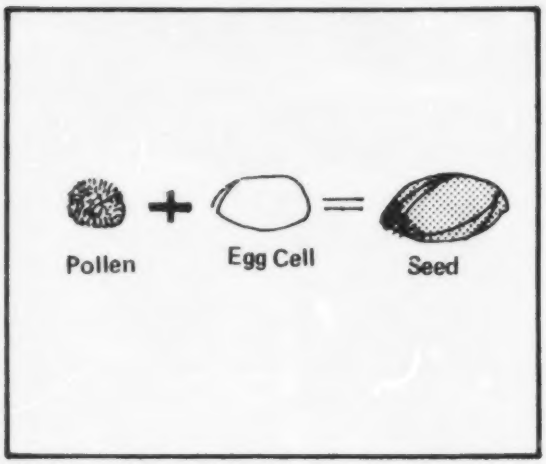
STEP 1 – When plants are sexually reproduced, they have two parents and come from seed. Study these pictures. Flowers have male and female parts.



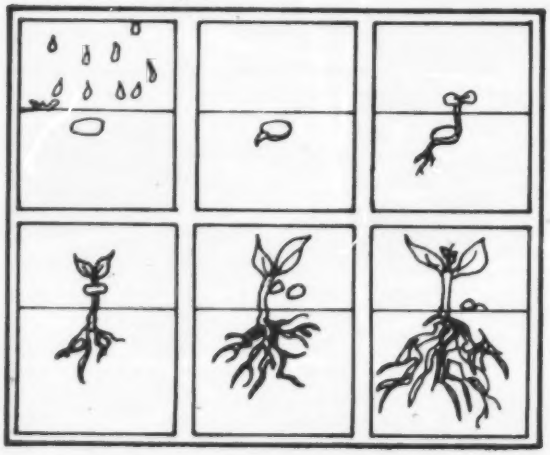
STEP 2 – The pistil is the female part. It contains the stigma, style, and ovary. This is where the seed is produced.



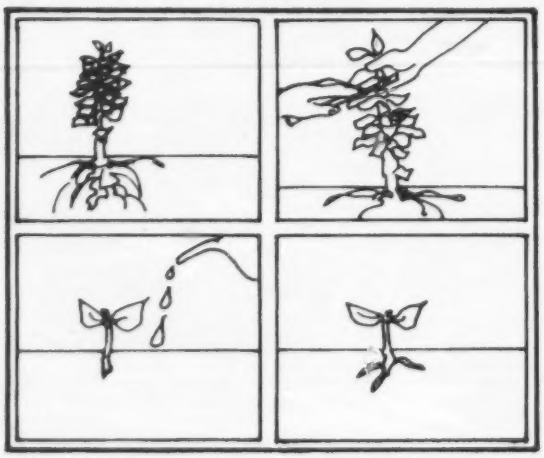
STEP 3 – The stamen is the male part of the flower. It produces pollen to fertilize the eggs. The stamen consists of the filament and anther.



STEP 4 – When the pollen and egg cells join, they form a seed in the ovary. This seed can then become a plant.



STEP 5 – Seeds germinate when they come in contact with water and heat. This results in a new plant. Study the diagram.



STEP 6 – Study this diagram of asexual reproduction. It only shows one way plants can be reproduced from plant parts.

Check Point

Label the male and female parts of the flower.

List steps in germination.

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Instructional Objective III

The student will prepare soil for germination.

STEP 1 – Take a gallon can and find the perlite – (it's white). (3.79 l)

STEP 2 – Now find the Redi-Earth or soil.

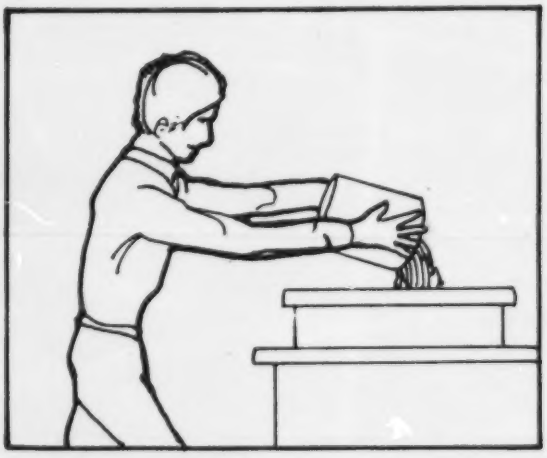
Check Point

Can you identify the perlite?

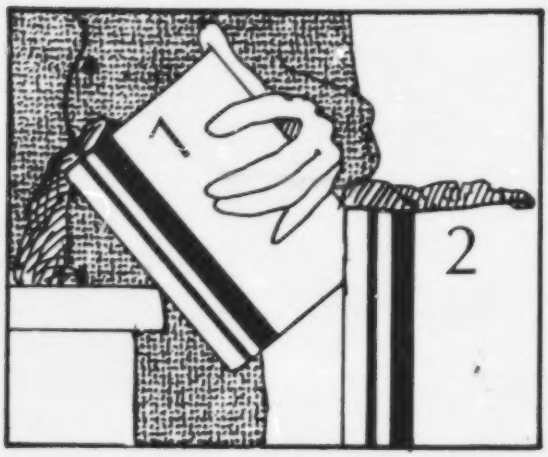
STEP 3 – Fill the one-gallon can to the top with the Redi-Earth or soil.

Check Point

Is the gallon can filled to the top? (3.79 l)



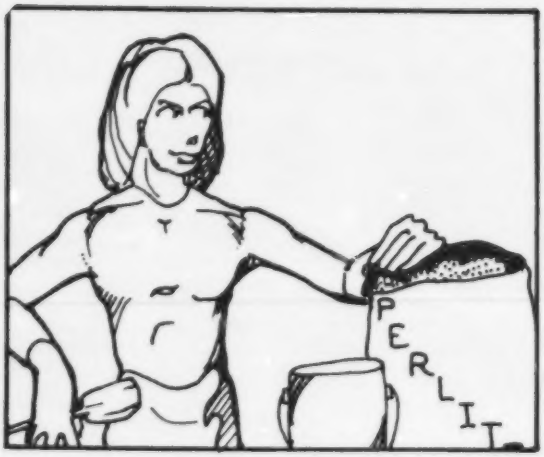
STEP 4 – Empty the can of Redi-Earth into a large empty container. (5-gallon size) (18.9 l)



STEP 5 – Now measure two more gallons of Redi-Earth and empty into the large container. (7.6 l)

Check Point

At this point you should have emptied the gallon can a total of three times. If you have not, start measuring again. (3.79 l)

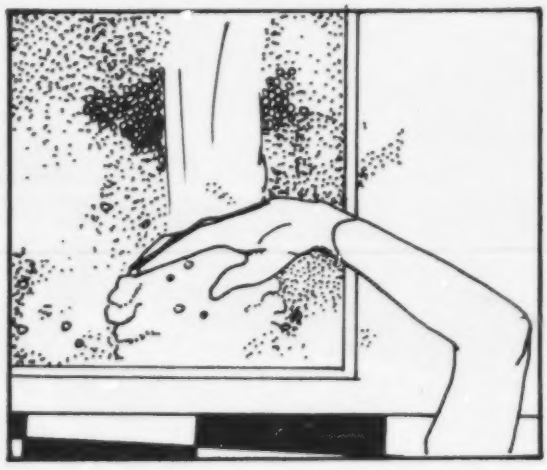


STEP 6 – Now fill the one-gallon can to the top with perlite. (3.79 l)

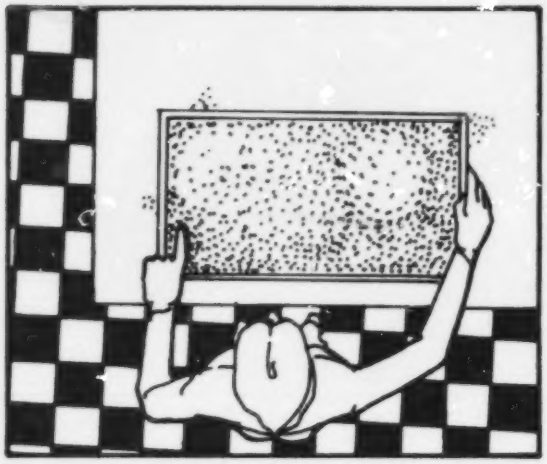
STEP 7 – Empty the perlite into the same container holding the Redi-Earth.

Check Point

Do you have three gallons of Redi-Earth and one gallon of perlite in the same container? If so, proceed to Step 8. (11.4 l)



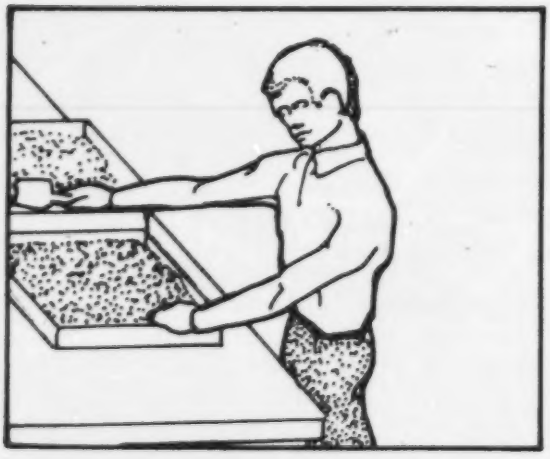
STEP 8 – Now mix the Redi-Earth and perlite with your hands or a stick.



STEP 9 – Mix ingredients until they are evenly mixed.

Check Point

Are there large patches of just Redi-Earth or perlite on the bottom or top? If so, continue to mix.



STEP 10 – When soil is well mixed, fill two flats completely to the top with the soil mixture.

STEP 11 – Now water the soil in the flats very slowly with a mister or watering can.

Check Point

Did the soil splatter out the sides of the flat?

Did the soil mixture sink below the top of the flat?

If you answered yes to either question, refill the flat to the top and SLOWLY water the soil. Do not water so much that it stands on the top of the soil.

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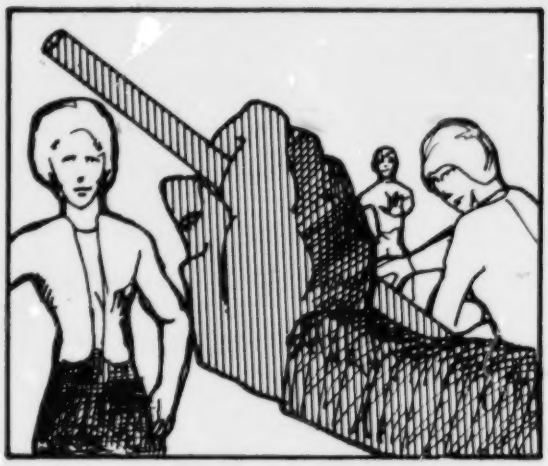
Instructional Objective IV

The student will mark five rows in a soil flat and seed the soil.

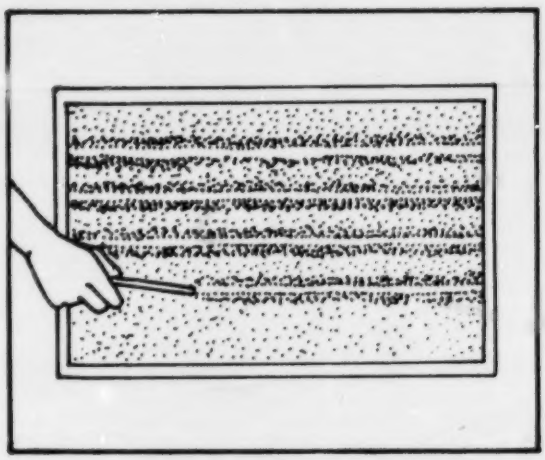
STEP 1 – Get one of the seed flats you prepared in Objective III.

STEP 2 – Check to see if the soil is moist in the flat.

STEP 3 – If the soil is not moist, get the water bucket and slowly water the soil.



STEP 4 – Get a knife or a label stick.



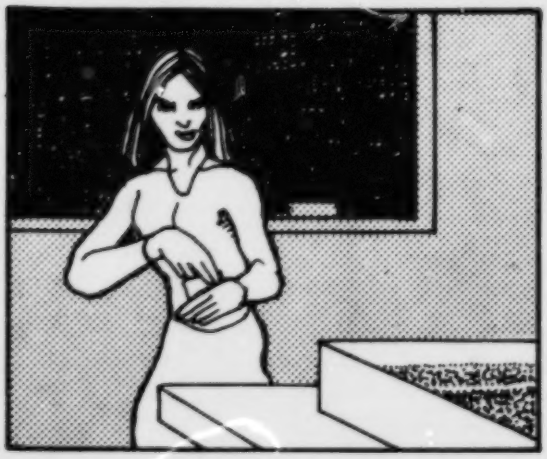
STEP 5 – With the knife or stick, mark five rows in the soil ¼" - ½" (.635 cm – 1.27 cm) deep.

Check Point

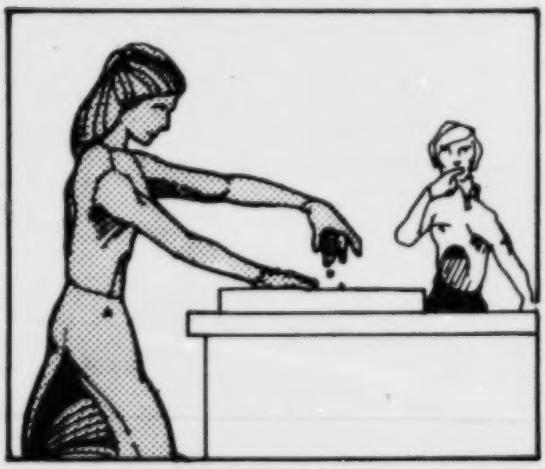
Did you make five rows?

Are they ¼" – ½" (.635 cm – 1.27 cm) deep? Check with ruler.

If rows are too deep, smooth soil and make rows again.



STEP 6 – Take a package of seed and open a corner.

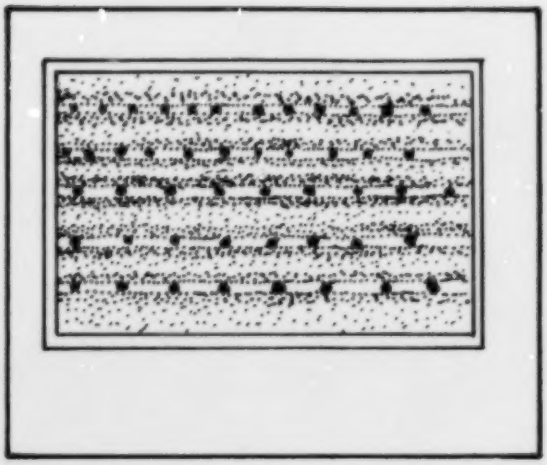


STEP 7 – Hold seed package over first row and lightly tap package to make seeds come out.

Check Point

Did the seeds come out slowly or in a big bunch?

If a large number of seeds landed in one spot, spread these out and tap again lightly.



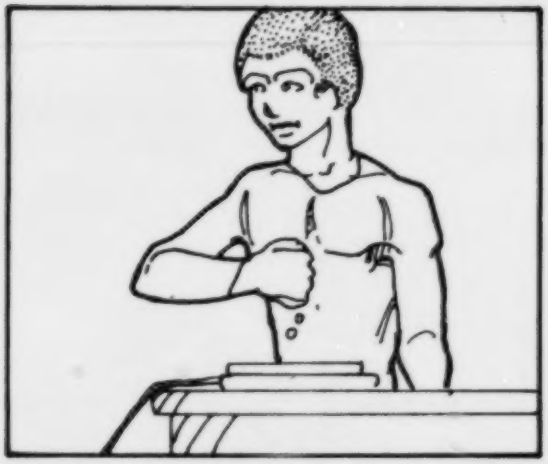
STEP 8 – Seeds should be sprinkled close but evenly in the rows.

STEP 9 – After planting the seeds, cover them evenly with soil.

STEP 10 – Now, slowly and lightly, wet the new soil.

STEP 11 – Place a thin layer of soil – about 2 to 3 inches (5.08 – 7.62 cm) in the bottom of the germinator.

STEP 12 – Label the flat with the date seeds were planted, type of seed, and your name.



STEP 13 – Place flat in the germinator.

STEP 14 – Cover germinator with plastic and plug in.

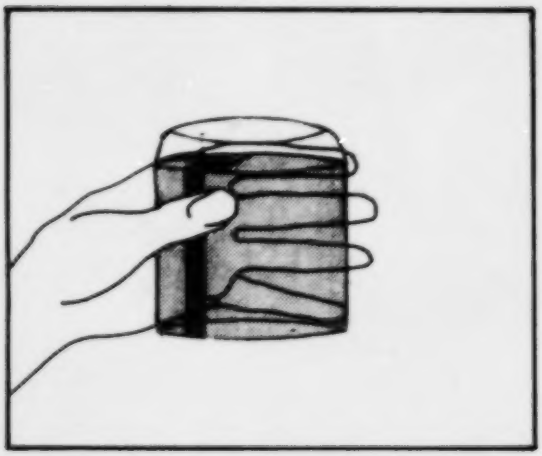
STEP 15 – Check flat daily to be sure that it remains wet until the seeds germinate.

Check Point

Be sure flats will receive light.

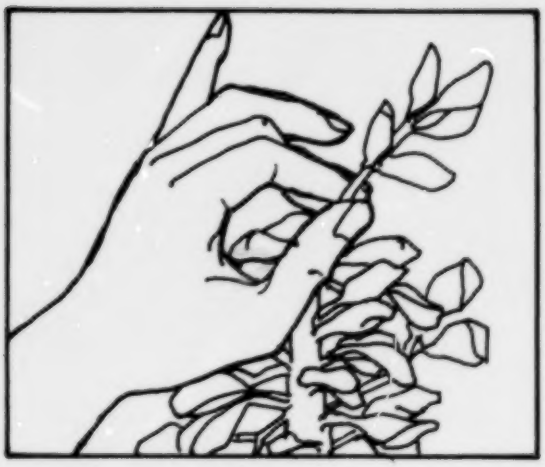
Instructional Objective V

The student will root stem cuttings in soil or water.



STEP 1 – Fill a bottle or small container to within ½ inch (1.27 cm) from the top of the bottle with water.

STEP 2 – Find a large plant with many branches.



STEP 3 – Now find a stem 1 to 2 inches (2.54 – 5.08 cm) long.

STEP 4 – Take your cutting knife and open the blade.

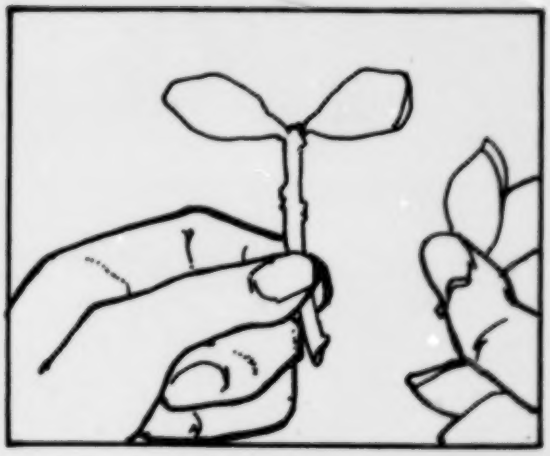
STEP 5 – Cut the stem at a node 1 to 2 inches (2.54 – 5.08 cm) below the tip.

Check Point

How long is your cutting?

Can you feel a bump where you cut the stem off?

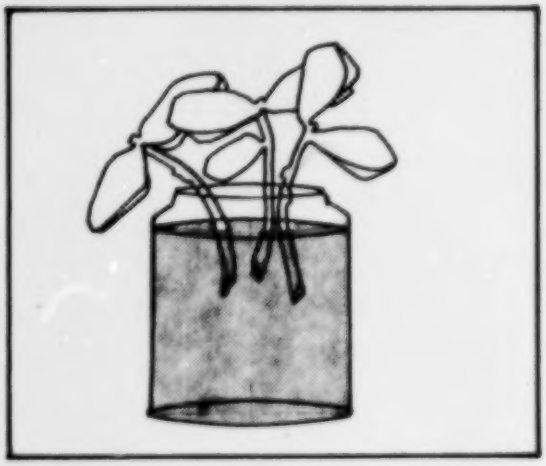
Did you cut the stem off smoothly?



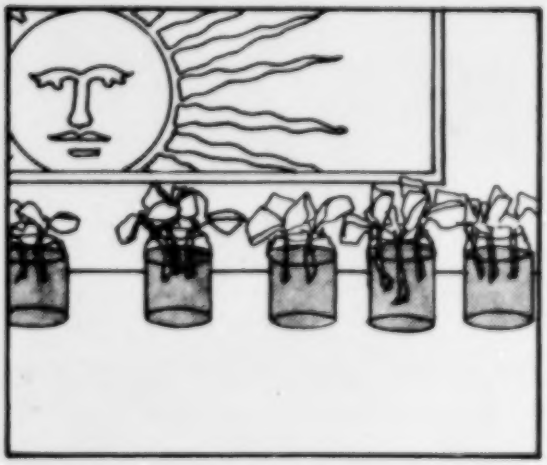
STEP 6 – Remove one or more leaves. (About three to four leaves should be left on the stem.)

STEP 7 – Take nineteen more cuttings doing the same as above. Repeat steps 3 to 5 nineteen times. (You should end up with twenty.)

STEP 8 – Now that the cuttings are made, place one to three cuttings per bottle of water.

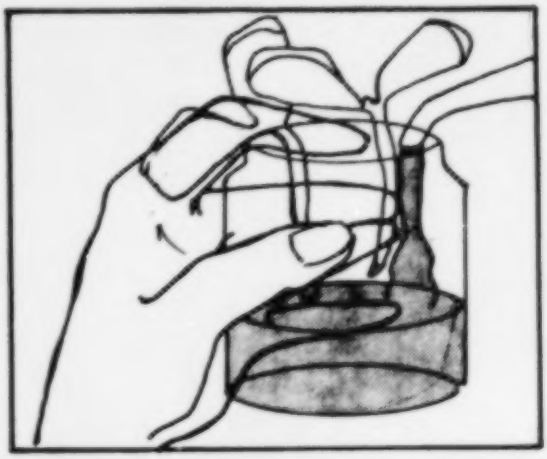


STEP 9 – Do not crowd the cuttings.



STEP 10 – Place containers in a lighted area.

STEP 11 – Check every day to see if water needs to be added.



STEP 12 – Add water if the water is below the stem.

STEP 13 – Take one of the flats you prepared with soil in Objective III.

STEP 14 – Water the flat of soil.

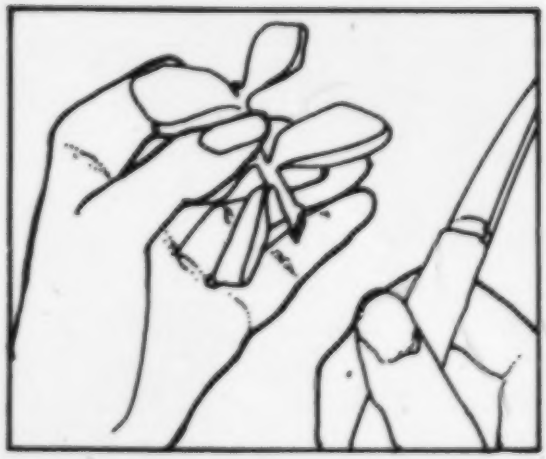
STEP 15 – Find a plant with many branches.

STEP 16 – Get knife out and open the blade.

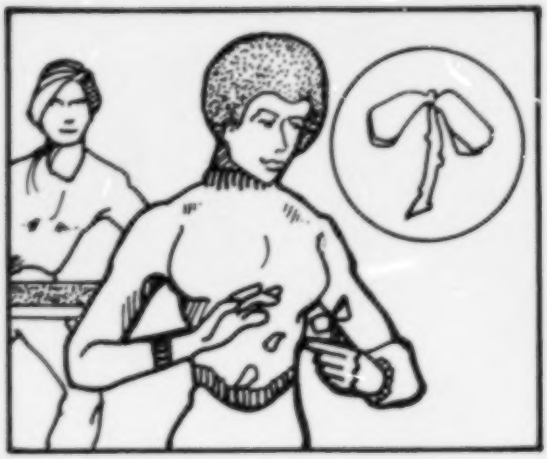
STEP 17 – Find a node about one to two inches (2.54 – 5.08 cm) below the tip of the plant.

Check Point

Does the area you think to be the node feel bumpy?



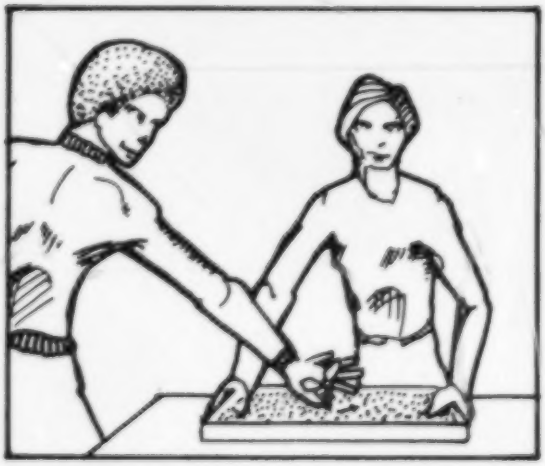
STEP 18 – Cut the stems off at the node.



STEP 19 – Remove all but three or four leaves at the top of the stem.

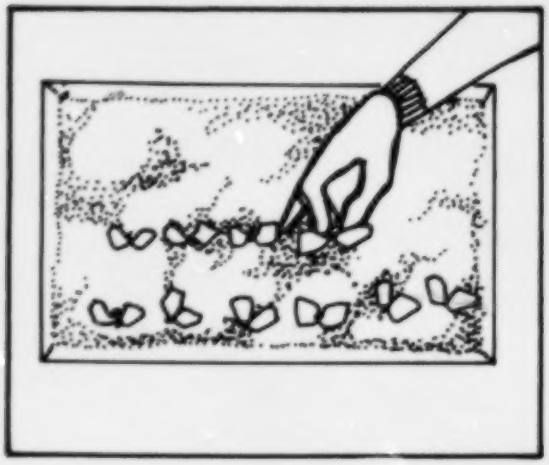
Check Point

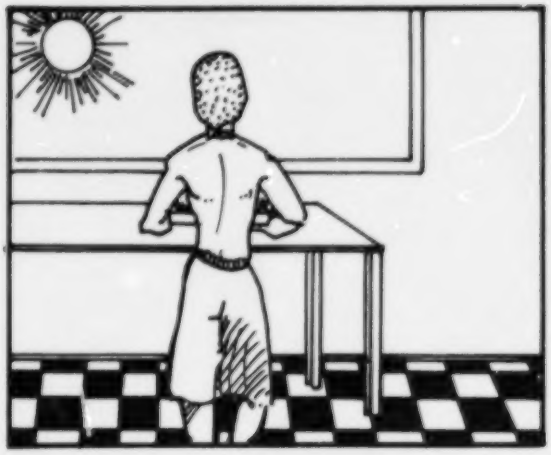
Is the stem cut smoothly?



STEP 20 – Place the stem cutting ¼" – ½" (.635 – 1.27 cm) deep in the soil.

STEP 21 – Now repeat steps 17 – 20 about twenty times (make 20 more cuttings).



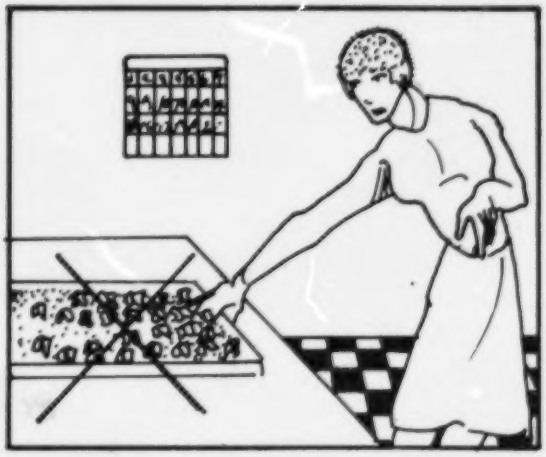


STEP 23 – Place flat where it will receive light.

Check Point

Do you have 20 to 21 cuttings in your flat of soil?

Are they placed ¼ – ½" (.635 – 1.27 cm) deep?



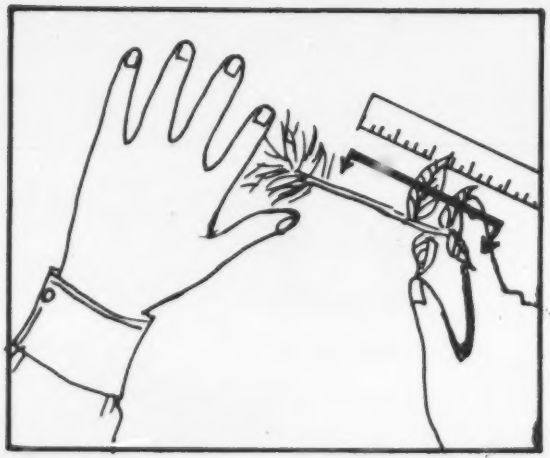
STEP 24 – Check daily to see if soil is wet. If not, add water. Do not allow cuttings to wilt.

STEP 22 – Water flat slowly.

Instructional Objective VI

The student will chart the growth of experimental plants.

STEP 1 – Remove cuttings from water.



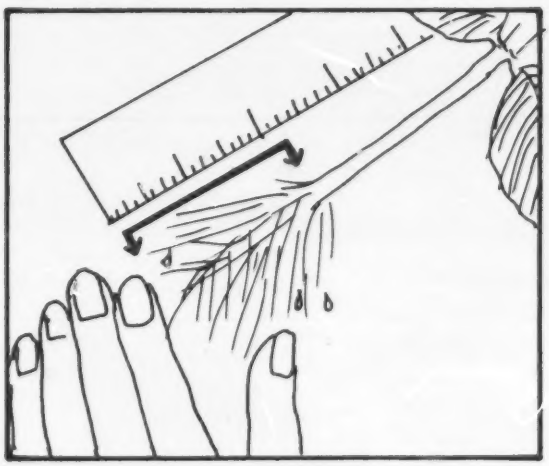
STEP 2 – Take a ruler and measure the length of cuttings from the tip to where the roots begin.

STEP 3 – Enter these measurements in the first column of the chart provided.

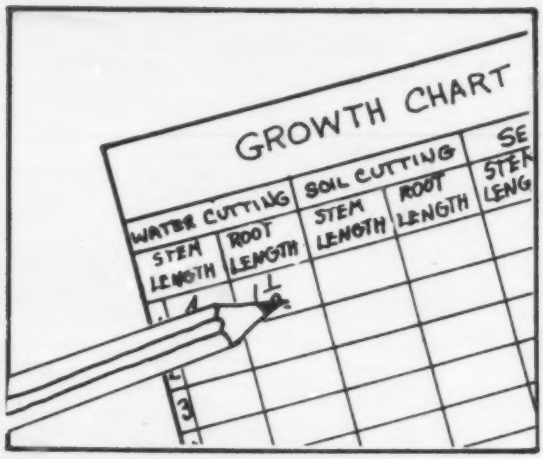
Check Point

Have you measured each cutting in water for length?

Are the measurements in the right column?

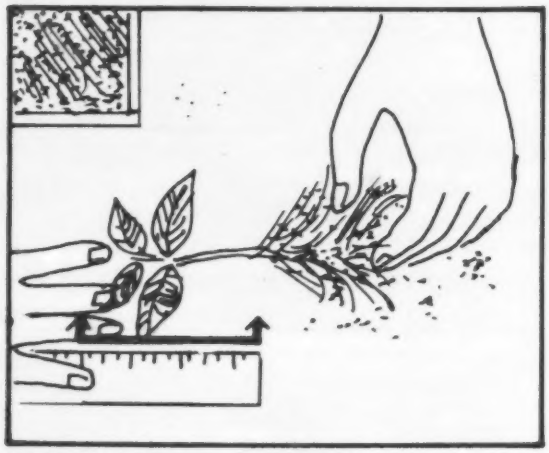


STEP 4 – Measure the length of the roots on the cuttings which were rooted in water.

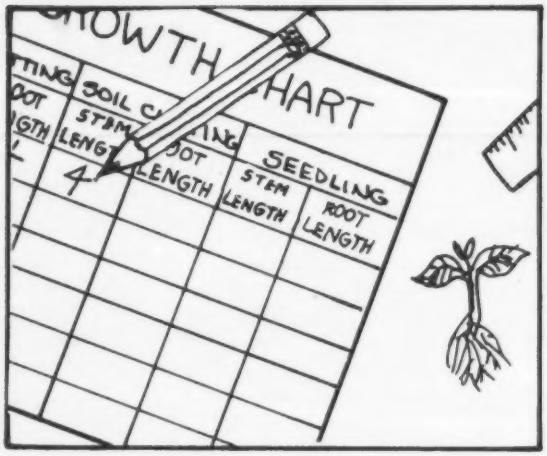


STEP 5 – Enter these measurements in the second column on the chart.

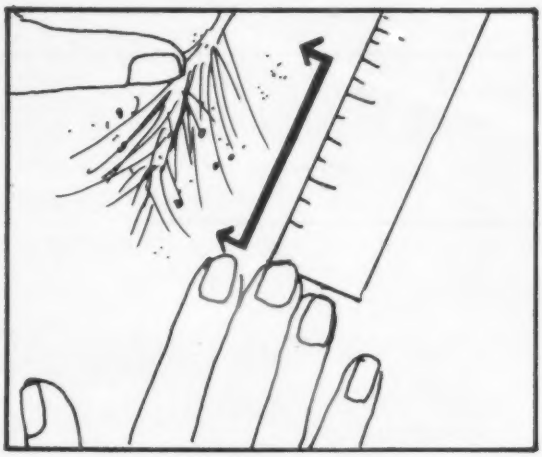
STEP 6 – Now remove the cuttings rooted in soil by digging under the plants to get the roots.



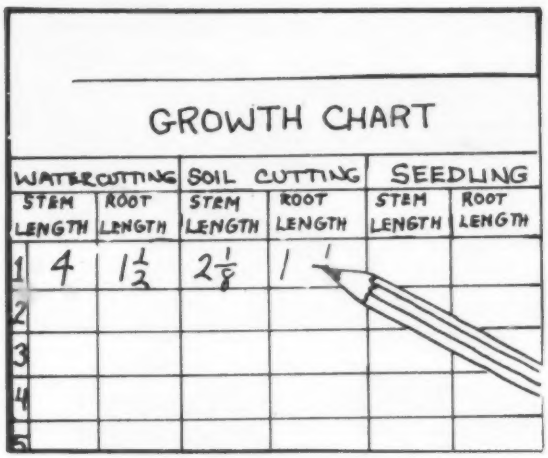
STEP 7 – Measure the length of the cutting rooted in soil from the tip to where the roots begin.



STEP 8 – Enter the measurements in the third column on the chart.



STEP 9 – Now measure the length of the roots.

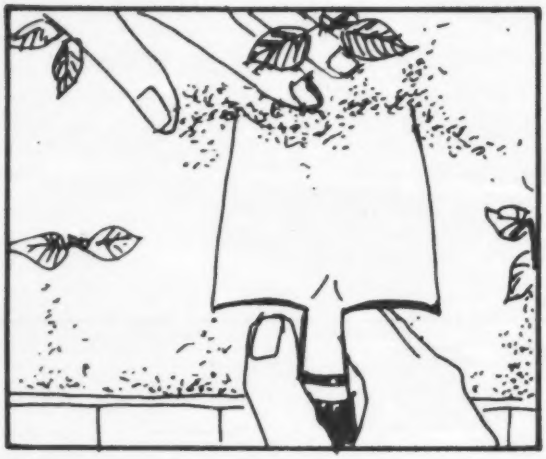


STEP 10 – Enter these measurements in the fourth column on the chart.

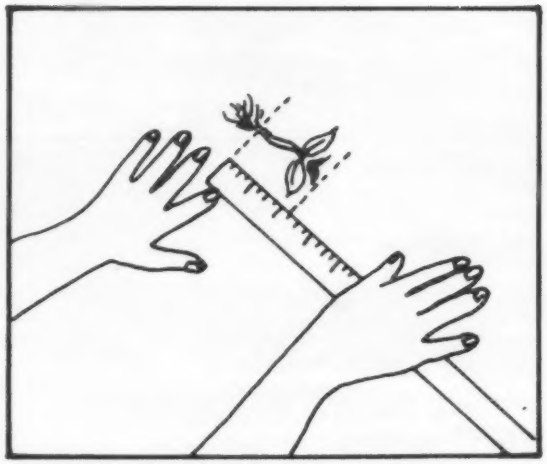
23

Check Point

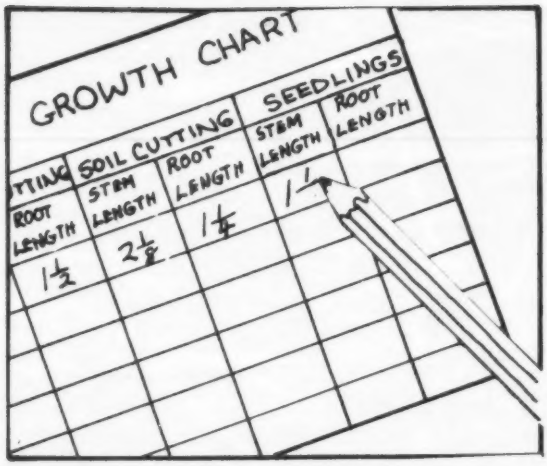
Have you measured each cutting made?



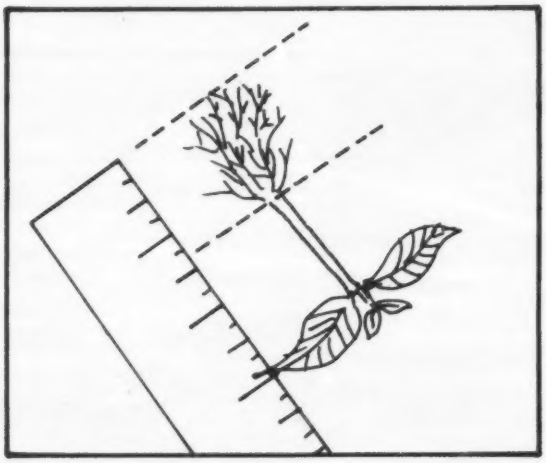
STEP 11 – Dig under the soil to remove twenty seedlings. Be sure to get the roots. Handle carefully.



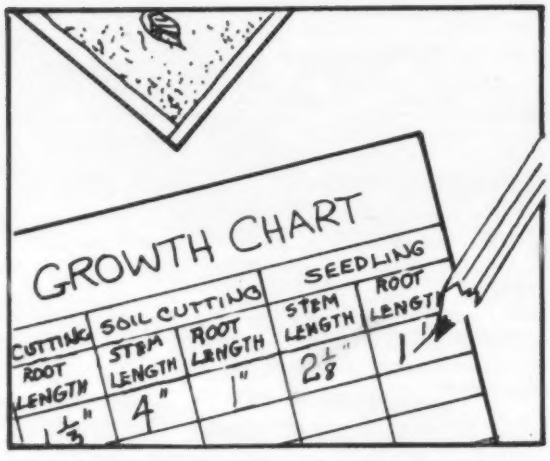
STEP 12 – Measure the length of each seedling with the ruler.



STEP 13 – Enter these measurements in the fifth column on the chart.



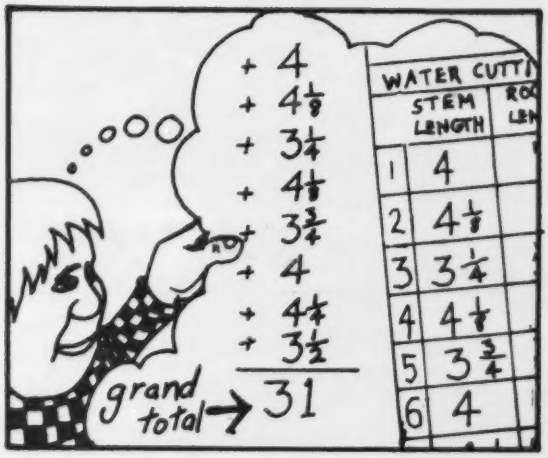
STEP 14 – Measure the root length on each seedling.



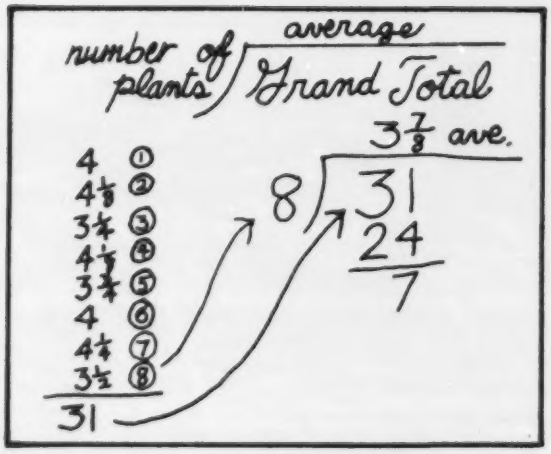
STEP 15 – Enter these measurements in the sixth column.

Check Point

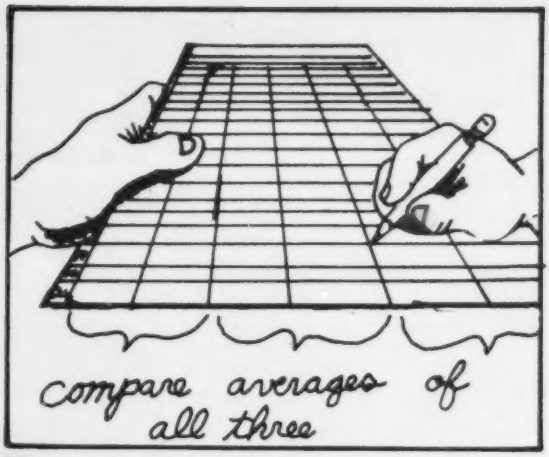
Have you measured at least twenty plants for each group of plants? Have you entered each measurement in the proper column on the chart?



STEP 16 – Now add each column of measurements for a grand total.



STEP 17 – Divide each grand total by the number of plants measured for that column.



STEP 18 – After you get an average for each column, evaluate the three different methods of propagation by comparing averages.

Check Point

Which method rooted the fastest?

Which method produced the largest plants the quickest?

Which method produced the strongest roots?

Which method would you choose to reproduce plants and why?

30

405.131-010 SUPERVISOR HORTICULTURAL-SPECIALTY FARMING (agric.)

Supervises and coordinates activities of workers engaged in propagating, cultivating, and harvesting horticultural specialties, such as trees, shrubs, flowering plants, flowers, and mushrooms, applying knowledge of environmental-control structures, systems, and techniques and plant culture: Discusses plant growing activities with management personnel to plan planting and picking schedules and employee assignments; obtain authorization for changes in fertilizer, herbicide, and pesticide application techniques and formulas; resolve problems; and develop procedures for new species in product line and new cultivation techniques. Observes plants and flowers in greenhouses, pots, cold frames, and fields to ascertain condition, such as leaf texture and bloom size; and oversees changes in humidity and temperature levels and cultivation procedures to insure conformance with quality-control standards. Prepares and assigns work schedules. Trains new employees in gardening techniques, such as transplanting and weeding, and grading and packaging activities. Inspects facilities for signs of disrepair, such as missing glass-panes and clogged sprinklers, and delegates repair duties to insure refurbishing or replacement of parts in environmental-control structures and systems. May drive and operate heavy machinery, such as dump truck, four-wheeled tractor, and growth-media tiller, to handle materials and supplies. May perform variety of duties involving propagation, care, and marketing of plants and crops. Performs other duties as described under SUPERVISOR (any ind.). May be identified according to kind of establishment as GREENHOUSE SUPERINTENDENT (agric.); or crop, as MUSHROOM-GROWING SUPERVISOR (agric.); ORCHID SUPERINTENDENT (agric.).

405.161-014 HORTICULTURAL-SPECIALTY GROWER, FIELD (agric.)

Propagates and grows horticultural-specialty products and crops, such as seeds, bulbs, rootstocks, sod, ornamental plants, and cut flowers: Plans acreage utilization and work schedules, according to knowledge of crop culture, climate and market conditions, seed, bulb, or rootstock availability, and employable workforce and machinery. Attaches farm implements, such as disc and fertilizer spreader, to tractor and drives tractor in fields to till soil and plant and cultivate crop. Inspects fields periodically to ascertain nutrient deficiencies, detect insect, disease, and pest infestations, and identify foreign-plant growth, and selects, purchases, and schedules materials, such as fertilizers and herbicides, to insure quality control. Hires field workers, assigns their duties, according to scheduled activities, such as planting, irrigating, weeding, and harvesting, and oversees their activities. Maintains personnel and production records. Arranges with customers for sale of crop. May oversee activities, such as product cleaning, grading, and packaging. May provide customer services, such as planning and building planters, walls, and patios, and planting and caring for landscape and display arrangements. May bud or graft scion stock on plantings to alter growth characteristics. May develop new variations of species specialty to produce crops with specialized market-appeal, such as disease resistance or color brilliance. May cultivate out-of-season seedlings and crops, using greenhouse. May cultivate cover crop, such as hay or rye, in rotation with horticultural specialty to rejuvenate soil. May drive and operate self-propelled harvesting machine. May lubricate, adjust, and make minor repairs on farm machinery and equipment. May build, remove, and repair farm structures, such as fences and sheds. May be designated according to crop, as BULB GROWER (agric.); FLOWER GROWER (agric.); GRASS FARMER (agric.); ROSE GROWER (agric.); SEED GROWER (agric.); SHRUB GROWER (agric.).

405.161-018 HORTICULTURAL-SPECIALTY GROWER, INSIDE (agric.)

Grows horticultural-specialty products and crops, such as flowers, ornamental plants, and vegetables, under environmentally-controlled conditions, applying knowledge of plant culture, environmental-control systems and structures, and market conditions: Determines types and quantities of plantings to grow; allocates space in structure, such as greenhouse or shed; and schedules growing activities. Plants seeds and transplants seedlings in material, such as bark, gravel, heated water, sandy soil, and stable straw to propagate seeds and nursery stock. Removes substandard plants to maintain quality control, prunes plants to enhance development, and positions plants to artistically display products. Monitors timing and metering devices that control frequency, amount, and type of nutrient applications; regulate humidity, ventilation, and carbon dioxide conditions; and dispense herbicides, fungicides, and pesticides. Explains and demonstrates care-taking techniques to subordinates. May assign their duties. May hire workers. May maintain personnel and production records. May deal with vendors to purchase supplies and materials, and arrange with customers to sell products and crops. May be identified with crop as BEAN-SPROUT GROWER (agric.); MUSHROOM GROWER (agric.); ORCHID GROWER (agric.); or technique as HYDROPONICS GROWER (agric.).

405.361-010 PLANT PROPAGATOR (agric.)

Propagates plants, such as orchids and rhododendrons, applying knowledge of environmental controls and plant culture: Confers with management personnel to ascertain type and number of species to propagate and to develop and revise nutrient formulas and environmental-control specifications. Selects materials according to kind of plant; mixes growth media; and prepares containers, such as jars, pots, and trays. Initiates new plant growth using methods, such as following: (1) Cuts leaves, stems, or rhizomes from parent plant and places cuttings in growth media. (2) Bends, covers or buries branches of parent plant in soil, securing branches with pegs or rocks. (3) Wounds stems of parent plant, using sharp knife, inserts pebble into wound, and binds wound with moss, burlap or raffia. (4) Plants meristem and seeds in growth media. (5) Breaks off or cuts apart and plants roots, crowns and tubers from parent plant. Inspects growing area to ascertain temperature and humidity conditions, and regulates systems of heaters, fans, and sprayers to insure conformance with specifications. Gives transplanting and cultivation instructions to coworkers, and monitors activities to assure adherence to established plant-culture procedures. May graft or divide developing plants to promote altered growth characteristics. May log activities, maintain propagation records, and compile periodic reports.

405.684-014 HORTICULTURAL WORKER (agric.) I

Plants, cultivates, and harvests horticultural specialties, such as flowers and shrubs, and performs related duties in environmentally-controlled structure applying knowledge of environmental systems: Ascertains growing schedules and deviations from established procedures from grower or manager. Sows seed and plants cuttings. Looks at and feels leaf texture, bloom development, and soil condition to determine nutrient and moisture requirements and to detect and identify germ and pest infestations. Sets fertilizer timing and metering devices that control frequency and amount of nutrients to be introduced into irrigation system. Applies herbicides, fungicides, and pesticides to destroy undesirable growth and pests, using spray wand connected to solution tank. Reads and interprets sensing indicators and regulates humidity, ventilation, and carbon dioxide systems to control environmental conditions. Grafts scions to seedling stock. Pollinates, prunes, transplants, and pinches plants, and culls flowers, branches, fruit, and plants to insure development of marketable products. Harvests, packs, and stores crop, using techniques appropriate for individual horticultural specialty. May maintain and repair hydroponic and environmental control systems. May maintain and repair structures, using materials, such as corrugated fiberglass panels, lath, glass panes, and putty, and

tools, such as hammer, saw, and putty knife. May be designated according to work location as GREENHOUSE WORKER (agric.); according to techniques employed as HYDROPONICS WORKER (agric.); or according to horticultural specialty as ORCHID WORKER (agric.).